

## Two new African genera of Encyrtidae (Hymenoptera: Chalcidoidea)

by

D. P. ANNECKE

Plant Protection Research Institute, Pretoria

Two new bothriothoracine genera of Encyrtidae are described, namely *Macchiencyrtus* for the type-species *M. stigmatosus* spec. nov. and two other South African species, *M. secus* and *M. tertius* spp. nov., all of which are probably parasitic in scale insects; and *Hesperencyrtus* for the West African type-species *Paraphaenodiscus lycaenophila* Risbec, 1951, a parasite of the pupa of a lycaenid butterfly.

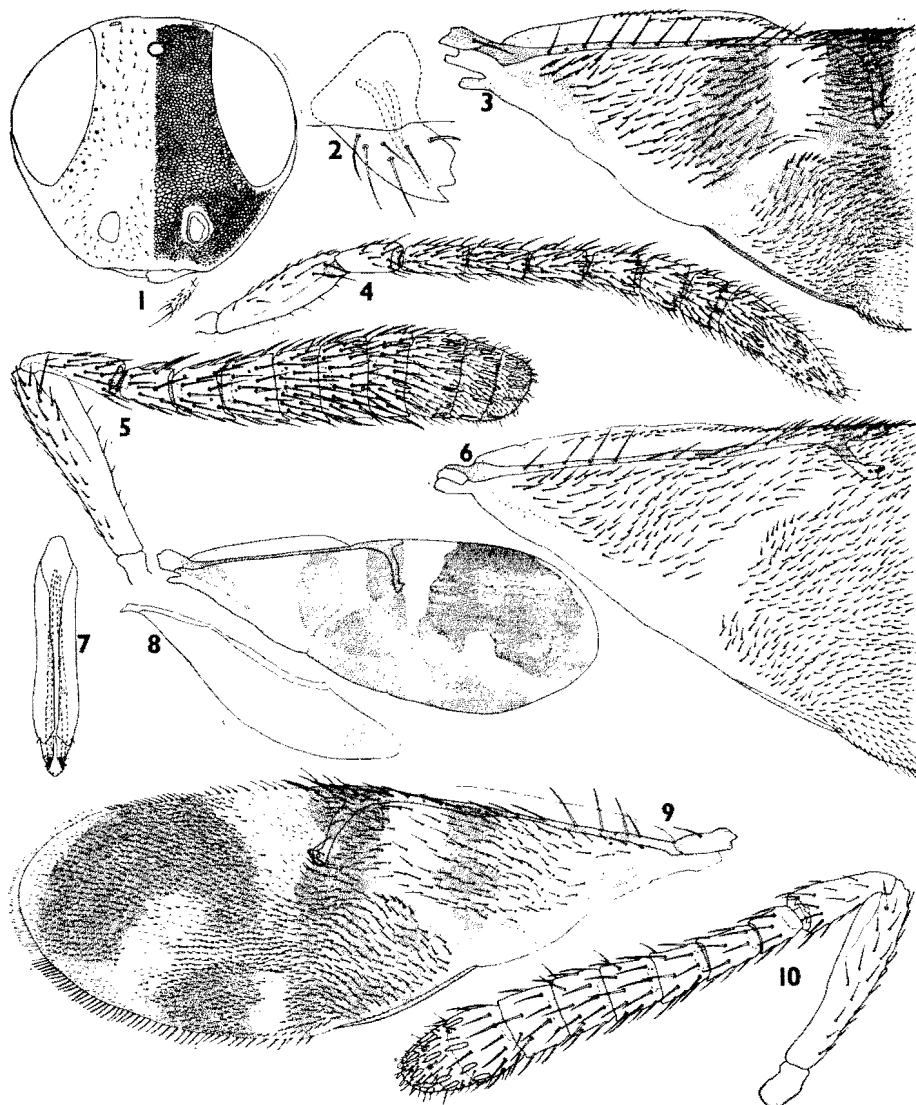
One of the new genera described here is required for three distinctive coccoid-inhabiting species collected in the southern part of South Africa, and the other for a West African species recorded as parasitic in the pupa of a lycaenid butterfly.

### **MACCHIENCYRTUS** gen. nov.\*

Type-species: *Macchiencyrtus stigmatosus* spec. nov.

FEMALE. Stout-bodied bothriothoracine encyrtids with an elongate stigmal vein and a strong pattern of maculation in the forewing; general colour of body blackish-brown or a shade of brown, shiny but not refringent or only on certain parts; head with anterior margin evenly convexly rounded in dorsal view, and posterior margin slightly concave; frontovertex more or less strongly punctate, moderately broad, declivous anteriorly, curving without a carina on to face; antenna inserted below lower level of eyes; scrobes rather short, not strongly impressed, not confluent dorsally; maxillary palpi each with four segments, labial each with three; mandible with an acute ventral tooth and a broad retuse upper one; antenna eleven-segmented, the funicle six-segmented; scape not or only slightly ventrally expanded; thorax without parapsidal sulci; scutellum without a tuft of setae; forewing patterned with hyaline and very dark areas (figs 3 and 8), and with contrasting pale and dark discal setae, the apex narrowly hyaline; submarginal vein slender, marginal and postmarginal present, longer than wide; stigmal vein very long, not straight, produced into disc of wing almost at right angles to marginal vein; gaster subtriangular, pointed apically, shorter than thorax, ovipositor not or slightly extruded.

\* The name is derived from "Cape Macchia", the fine-leaved sclerophyll vegetation type of the South-Western Cape Province, on which the three included species were collected.



Figs 1-8. *Macchiencyrtus stigmosus* gen. et spec. nov., paratypes. 1. Head (♀ T 3190-1). 2. Right mandible (♀ T 895). 3. Base of right fore wing (♀ T 3190-1). 4. Right antenna, outer aspect (♂ T 3190-2). 5. The same (♀ T 3190-1). 6. Base of right fore wing (♂ T 3190-2). 7. Genitalia (♂ T 3190-2). 8. Right wings to show maculation (♀ T 3190-1).  
 Figs 9-10. *Macchiencyrtus tertius* gen. et spec. nov., paratypes. 9. Left fore wing (♀ T 3360-1). 10. Left antenna, outer aspect (♀ T 3360-1).

MALE. Somewhat like that of a *Microterys* species, but the head in dorsal view anteriorly rounded, the occipital surface only slightly concave; forewing hyaline or nearly so, the venation normal (fig. 6); antenna nine-segmented, the solid club subacuminate at apex; genitalia of type-species as shown in fig. 7.

The relationships of the genus are difficult to determine. They may lie, perhaps rather distantly, with *Microterys* Thomson, *Trichomasthus* Thomson, *Bothriophryne* Compere and allied genera. But in a perfected classification, the female wing venation, coupled with other characters, may possibly be sufficiently distinctive, and unusual in the Encyrtidae, to warrant the erection of a distinct monobasic subtribe.

***Macchiencyrtus stigmus* spec. nov., figs 1–8**

FEMALE. Colour dark blackish-brown, the following parts otherwise: face above mouth including interscrobal prominence, cheeks and temples brown; radicle and scape slightly paler brown; legs generally dark brown, the tarsi and spurs paler, usually somewhat reddish-brown; forewing with strong discal infuscations and contrasting hyaline areas (fig. 8); hind wing with apex infuscated, remainder hyaline.

Length about 1.8 mm.

Head (fig. 1), viewed dorsally with occiput at the perpendicular, more than twice as wide as long; frontovertex steeply declivous anteriorly, more than one-third head width, narrowest anterior to lateral ocelli, becoming slightly broader anteriorly; ocelli rather small, placed in about a right-angled triangle, the lateral pair equidistant and each more than their diameter from orbits and from the acute fronto-occipital margin; antennal insertions about as far from each other as from orbits, much closer to mouth margin, their upper level well below lower eye level; scrobes very weakly impressed on face, separated above, usually by a slight concavity, their upper limits above lower eye level; interscrobal prominence hardly elevated; mandible (fig. 2) with a strong acute ventral tooth and a retuse dorsal truncation the lower end of which is subacute, the upper rounded; antenna (fig. 5) with scape slightly expanded ventro-distad; pedicel longer than funicle segment I; funicle with the four apical segments somewhat laterally compressed; seen in profile, funicle I and II longer than wide, III subquadrate; IV–VI each wider than long; club short, approximately 1.5 times as long as greatest width, roundly truncate apically, the three segments transverse; all club segments, and usually the four apical funicle segments, with short rhinaria; antenna with numerous slender setae; sculpture of head (fig. 1) cellulate-reticulate with numerous small setigerous punctures on frontovertex, face except scrobes, cheeks and temples, the setae fine and short, becoming longer on cheeks near mouth.

Thorax stout, broad, slightly convexly rounded dorsally, not much longer than broad in dorsal view; pronotum about one-third as long as mesoscutum on the midline; mesoscutum more than twice as wide as median length; axillae not elevated, meeting mesally or nearly so; scutellum broader than long, not elevated, posteriorly declivous, overlapping metanotum medially; propodeum not much narrowed medially, fully one-fourth as long as scutellum on midline, shortly produced laterocaudad into a broadly rounded angle; sculpture of thorax like that on frontovertex, but the setae longer; posterior declivity of scutellum smooth and polished.

Legs not specially modified; middle tibial spur strong, about as long as adjacent tarsal segment.

Forewing (fig. 3) with costal cell broad, narrowing sharply towards marginal vein; submarginal vein straight, slender; marginal present, broadened distad; post-marginal approximately twice as long as median width; stigmal prodigiously developed, more than one-third as long as width of wing at level of marginal vein; speculum separated from apex of stigmal vein by about five rows of setae; basal triangle of wing entirely setose save narrowly towards base along hind margin; remainder of wing densely and coarsely setose, except the setae in hyaline areas which are slender; hind wing setose from near base to apex.

Gaster shorter than thorax, apically rounded; ovipositor slightly shorter than middle tibia, occupying almost the entire length of gaster; gonostyli a little shorter than middle tibial spur, exerted at apex for about one-half their length.

MALE. Head, dorsum of thorax and gaster blue-black, slightly refringent; venter of thorax blackish-brown; antenna concolorous; wings hyaline except for a slight darkening of the disc beyond venation, especially along anterior margin; legs brown to blackish-brown. Frontoververtex fully one-half head width; ocelli in an obtuse-angled triangle; head less convexly rounded anteriorly in dorsal view, than in female; in this view, scrobes and interscrobal prominence not visible; scrobes distinctly impressed, separated dorsally; antenna (fig. 4) with first four funicle segments decreasing in length, each longer than wide; V subquadrate; VI wider than long; club acuminate apically, dorsally slightly obliquely truncate; wing venation (fig. 6) normal; genitalia as in fig. 7.

MATERIAL EXAMINED. ♀-Holotype, 28♀- and 10♂-paratypes:—SOUTH AFRICA: Cape Point, C.P., x.1969, H. P. Insley, on *Berzelia lanuginosa* Brongn. (♀-holotype, 26♀ 9♂, T 3190); on *Metalasia muricata* L. Less. (1♀ 1♂, T 3234); ex soft scale on *Aspalathus* sp. (1♀, T 3302). One further female (T 895, SOUTH AFRICA: Yserfontein, C.P., v.1962, D. P. Annecke, walking on *Tachardina digitata* Munting on *Euclea racemosa* J. A. Murray) is determined as conspecific but, because of slight differences, is not included among the types. Holotype and paratypes are in the National Collection of Insects, Plant Protection Research Institute, Pretoria; paratypes of each sex are in the British Museum (Natural History), London, and the United States National Museum, Washington.

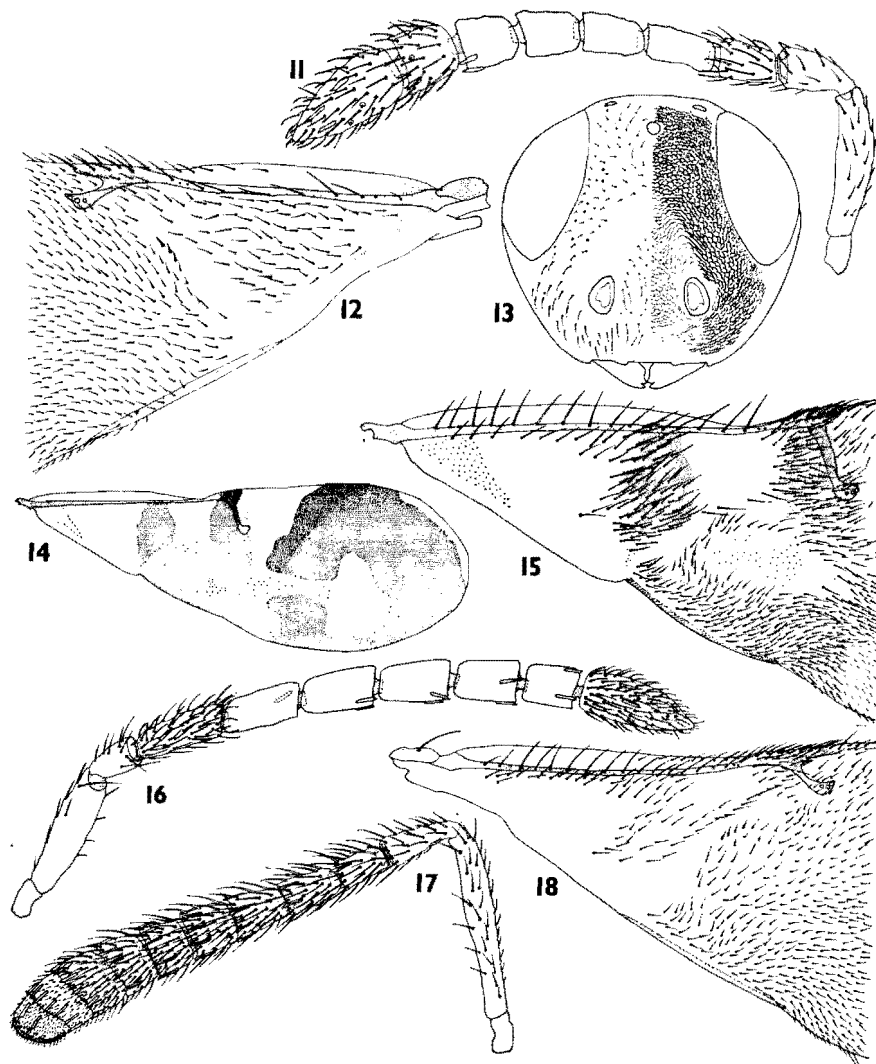
The hosts of the longer Cape Point series (T 3190) have been determined by Mr G. de Lotto, Plant Protection Research Institute, Pretoria, as an undescribed species of *Filippia* Targ. This coccid infested the twigs of the plant in clusters each of which was wholly enclosed in an arboreal ant-nest consisting mainly of plant-material. The emerging parasites drilled large circular emergence holes through the derm of the host and through the tough dry layer of enclosing waxy material.

### *Macchiencyrtus tertius* spec. nov., figs 9–13

This species resembles the type-species *stigmus* more closely than it does the following one. It may be distinguished by the following combination of characters:

FEMALE. Colour largely black with weak metallic bluish reflections on head and thoracic dorsum; ocelli distinctly smaller, relative to width of frontoververtex, than in *stigmus*; surface of frontoververtex roughened by numerous setigerous punctures stronger than in *stigmus*, but the surface not pitted as in the following species; scrobes (fig. 13)

well formed, their edges steeply sloping, rounded not acute, separated dorsally by a narrow continuation of the interscrobal prominence which is better developed than in *stigmatus*; toruli about equidistant from eyes and from mouth, their upper edges at



Figs 11–13. *Macchiencyrtus tertius* gen. et spec. nov., paratypes. 11. Left antenna, outer aspect (♂ T 3360–2). 12. Base of fore wing (♂ T 3360–2). 13. Head (♀ T 3360–1).

Figs 14–18. *Macchiencyrtus secus* gen. et spec. nov., paratypes. 14. Right fore wing to show maculation (♀ T 979). 15. Base of right fore wing (♀ T 979). 16. Right antenna, outer aspect (♂ T 2785). 17. Right antenna, inner aspect (♀ T 979). 18. Base of right fore wing (♂ T 2785).

about lower level of eyes; antenna (fig. 10) with scape slightly expanded; funicle not densely setose, not appearing laterally compressed, resembling that of the following species more closely than that of *stigmaeus*, the apical funicle segment subquadrate; forewing (fig. 9) only slightly, but apparently rather consistently, different in maculation and setation from that of *stigmaeus*; relative lengths of ovipositor, gonostyli, middle tibia and its spur about as in *stigmaeus*.

Length about 1.4 mm.

MALE. Head much as in *stigmaeus* but, seen dorsally with occiput at the perpendicular, its rounded anterior margin interrupted by the scrobes which in this view are separated by a distinct interscrobal prominence; antenna (fig. 11) with funicle segment V longer than wide, VI subquadrate, the two together about as long as club; wing venation (fig. 12) normal.

MATERIAL EXAMINED. ♀-Holotype, 6♀- and 5♂-paratypes with the following data:—SOUTH AFRICA: Albertinia, C.P., iii.1970, H. P. Insley, ex *Tachardina grypha* Munting on *Elytropappus rhinocerotis* Less. (♀-holotype, 4♀ 4♂, T 3360); Oudtshoorn, C.P., iii.1970, H. P. Insley, ex *T. grypha* on *E. rhinocerotis* (2♀ 1♂, T 3364).

***Macchiencyrtus secus* spec. nov., figs 14–18**

This species resembles the type-species in general appearance to the extent that it may unhesitatingly be assigned to the same genus. Points of difference are stressed in the following description.

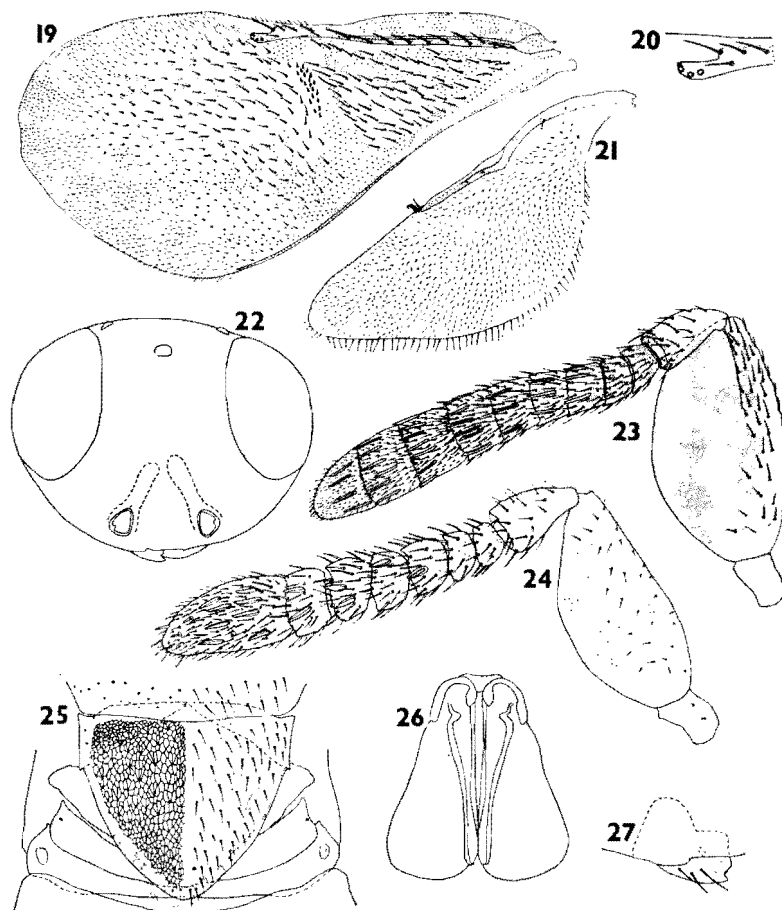
FEMALE. Colour more or less dark brown, only the gaster largely, the hind tibia and distal part of flagellum somewhat blackish-brown; face including scrobes, and sides and venter of thorax, dark straw-coloured; forewings maculate (fig. 14) very much as in *stigmaeus* but with distinct differences; hind wing hyaline.

Length about 1.8 mm.

Head with frontovertex narrowest at median ocellus, becoming slightly wider anteriorly and posteriorly, at narrowest a little more than one-fourth head width; ocelli in an acute-angled, almost equilateral triangle; frontovertex rather densely and strongly punctate, the punctures each about one-half the size of an ocellus, each giving rise to a slender seta; antenna (fig. 17) with funicle segments I–III distinctly longer than wide, IV subquadrate, V–VI wider than long but not so transverse as in *stigmaeus*; club longer relative to width than in *stigmaeus*. Thorax with scutellum distinctly elevated on the disc, declivous caudad, densely setose on anterior one-half, very sparsely so caudadly; forewing (fig. 15) with three hairless areas proximad to the level of the stigmal vein, and with four hyaline areas (fig. 14) distad to stigmal each with extremely fine colourless discal setae; the caudodistal hyaline area is distinctly larger than in *stigmaeus*.

MALE. Head with frontovertex at narrowest a trifle less than one-half head width; antenna (fig. 16) with all funicle segments longer than wide, and the club a little shorter than funicle segments V and VI together; scutellum with arrangement of setae as in female; wings hyaline, base of forewing and venation as in fig. 18.

MATERIAL EXAMINED. ♀-Holotype, 1♀- and 7♂-paratypes with the following data:—SOUTH AFRICA: Somerset West, C.P., x.1968, H. P. Insley, with *Cero-plastes*



Figs. 19-27. *Hesperencyrtus lycoenephila* (Risbec) **comb. nov.** 19. Left fore wing (♀ T 3214-2). 20. Stigmal vein enlarged (♀ T 3214-2). 21. Left hind wing, drawn to the same scale as fore wing (♀ T 3214-1). 22. Head (♀ T 3214-1). 23. Left antenna, outer aspect (♀ T 3214-1). 24. The same (♂ T 3435-2). 25. Scutellum (♀ T 3214-1). 26. Ovipositor (♀ T 3214-1). 27. Mandible (♀ T 3214-1). Figs 1-27 del. Miss H. P. Insley.

*elytropappi* (Brain) on *Elytropappus rhinocerotis* Less. (♀-holotype, 1♂-paratype, T 2785); Hopefield, C.P., x.1968, H. P. Insley, with ?*Gascardia rustica* (De Lotto) on *Selago fruticosa* L. (4♂-paratypes, T 2786); Strandfontein, C.P., vi.1962, J. Munting, with *Ceroplastes* sp. on *Chrysanthemoides monilifera* (L.) (1♀- and 2♂-paratypes, T 979). The host(s) of this species is not definitely known.

Shortly before submission of this paper for publication, a further series of specimens was obtained as follows: Graskop, Tvl, vii.1970, H. P. Insley, ex *Ceroplastes* sp. on *Helichrysum wilmsii* Moeser (14♀ 14♂, T 3540). This series is rather confidently

determined as *M. secus* but is not incorporated among the types. The females are paler in colour than are the types, being dark testaceous to brownish; antenna concolorous except apical funicle segment and club which are blackish-brown; in cleared specimens, the ovipositor is seen to be longer than middle tibia (about 17:13), and more than four times as long as gonostyli; the latter almost as long as middle tibial spur. The males resemble the types, but have a weak infuscation in the wing beneath marginal and stigmal veins, another just beyond middle of submarginal, and the anterior margin is palely infuscated beyond venation.

### Key to the species of *Macchiencyrtus* gen. nov.

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|---|--|----------------|
| 1 | Fore wing hyaline; antenna with club of a single segment; males . . . . .  | 4              |
| — | Fore wing with a bold pattern of infuscation; antennal club of three segments; females . . . . .   | 2              |
| 2 | Basal triangle of fore wing with a large area devoid of discal setae (fig. 15) . . . . .   | <b>secus</b>   |
| — | Basal triangle of fore wing largely setose (figs 3 and 9) . . . . .  | 3              |
| 3 | Antennal scrobes shallow, narrow, short (much shorter than scape), often separated above by a slight concavity; apical segment of funicle (fig. 5) transverse, about twice as wide as long, the funicle distad appearing somewhat laterally compressed . . . . . | <b>stigmus</b> |
| — | Antennal scrobes deeper, broader and longer (almost as long as scape), not confluent above, but not separated by a concavity; apical funicle segment (fig. 10) subquadrate, the funicle not compressed . . . . .   | <b>tertius</b> |
| 4 | Basal funicle segment almost twice as long as pedicel; apical funicle segment longer than wide; basal triangle of fore wing with a large area devoid of discal setae . . . . .   | <b>secus</b>   |
| — | Basal funicle segment about as long as pedicel; apical funicle segment wider than long or subquadrate; basal triangle of fore wing largely setose . . . . .  | 5              |
| 5 | Antennal club (fig. 5) about as long as the last three funicle segments together . . . . .   | <b>stigmus</b> |
| — | Antennal club shorter (fig. 10), about as long as the last two funicle segments together . . . . .   | <b>tertius</b> |

### *HESPERENCYRTUS* gen. nov.

Type-species: *Paraphaenodiscus lycoenephila* Risbec, 1951

This new genus is required for the distinctive species *Paraphaenodiscus lycoenephila* Risbec, type specimens of which have been studied, some after clearing in caustic soda. Several dried specimens from one of Risbec's air-cavity slides have been mounted on card points, and one has been selected and labelled as the lectotype, since Risbec made no holotype designation when describing the species. *P. lycoenephila* was recorded (Risbec, 1951) as a gregarious parasite of the pupa of *Deudorix antalus* Hpf. (Lepidoptera: Lycaenidae). The species was described from Senegal, West Africa.

**FEMALE.** Stout squat bothriothoracine encyrtids having head and body closely applied, the latter almost suboval in outline but with the sides somewhat straightened; gaster and propodeum closely and broadly articulated; scutellum (fig. 25) with a distinct apical and lateral flange, the disc hardly elevated, in a plane with axillae and mesoscutum; head (fig. 22) with frontovertex curving on to face; scrobes short, shallowly impressed as an inverted V on face, their margins rounded, and their upper limits narrowly separated; antennal insertions close to mouth; antenna (fig. 23) with eleven segments, the scape strongly expanded ventrally; mandible (fig. 27) with a ventral tooth and a broad retuse dorsal truncation; maxillary palpi four-segmented, labial palpi three-segmented; venation of forewing (figs 19 and 20) with marginal and stigmal veins almost in a straight line, postmarginal punctiform; stigmal short, about one-third as long as marginal; forewing (fig. 19) rather palely infuscated from base to near apex,



the latter hyaline and with normal short dense discal setae; disc with sparse slender discal setae in a broad area beyond and beneath stigmal vein; distal edge of speculum with 2-3 rows of very short stout spines; basal triangle of wing setose; wing margin almost entirely without fringe cilia; hind wing (fig. 21) broadening abruptly near base, broadest at about the middle of the wing, uniformly setose on disc; gaster short, rounded at apex; ovipositor (fig. 26) entirely hidden, the gonostyli not differentiated; cercal plates strongly advanced.

MALE. Structurally similar to female; antenna (fig. 24) with nine segments, the club undivided; scape swollen, especially towards base; wings like those of the female.

*Hesperencyrtus lycoenephila* (Risbec, 1951) **comb. nov.**, figs 19-27

This is the only species of the genus presently known. The original description (Risbec, 1951), together with the preceding generic description and the accompanying figures, suffice for purposes of recognition of the species.

MATERIAL EXAMINED. Risbec's type series consisting of 46♀ and 3♂, not 49♀ as stated by Risbec (1951:149). The present disposition of this material is as follows:—Muséum National d'Histoire Naturelle, Paris, France—♀-lectotype, 40♀ 2♂ (T 3425, 3214 and 3♀ on an original Risbec balsam slide); Office de la Recherche Scientifique et Technique Outre-Mer, Bondy, France—3♀ on an original Risbec balsam slide; Plant Protection Research Institute, Pretoria—2♀ 1♂ (T 3425).

#### REFERENCE

RISBEC, J. 1951. Les Chalcidoïdes d'A.O.F. *Mém. Inst. fr. Afr. noire* **13**: 7-409.

Manuscript received 26 October 1970.